



U.S. Department of Energy

Office of River Protection

P.O. Box 450
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04-ESQ-0203

04-WTP-204

SEP 02 2004

Mr. J. P. Henschel, Project Director
Bechtel National, Inc.
2435 Stevens Center
Richland, Washington 99352

Dear Mr. Henschel:

CONTRACT NO. DE-AC27-01RV14136 – APPROVAL OF AUTHORIZATION BASIS
AMENDMENT REQUEST (ABAR) 24590-WTP-SE-ENS-04-0131, REVISION 0, CHANGE
OF HIGH PRESSURE STEAM (HPS) ISOLATION VALVE CLASSIFICATION

Reference: BNI letter from J. P. Henschel to R. J. Schepens, ORP, "Transmittal for Approval:
Authorization Basis Amendment Request 24590-WTP-SE-ENS-04-0131,
Revision 0, Change of HPS Isolation Valve Classification," CCN: 090161, dated
August 20, 2004.

This letter approves ABAR 24590-WTP-SE-ENS-04-0131, Revision 0, submitted to the
U.S. Department of Energy (DOE), Office of River Protection (ORP) by Bechtel National, Inc.
(Reference). The attached Safety Evaluation Report (SER) approves changes in the Pretreatment
Facility (PT) involving the reclassification of automatic isolation valve HPS-V-00274 from non-
Important to Safety to Important to Safety, Safety Design Class (SDC). In addition to the valve,
monitoring equipment that will detect a loss of pressure in the HPS system that will cause
actuation of the valve will be classified as SDC. This valve shuts off the steam supply in the
event of a steam line break. A steam line break within a hot cell could introduce enough
moisture to degrade the effectiveness of the C5V HEPA filters.

No specific page changes were provided in ABAR 24590-WTP-SE-ENS-04-0131 because the
pages were changed by an earlier Safety Evaluation (SE) 24590-WTP-SE-ENS-04-058. SE
24590-WTP-SE-ENS-04-058 was written in response to DOE safety review questions, PT-
PSAR-152 and 287, resulting from the review of the PT Preliminary Safety Analysis Report
(PSAR), Revision 1. This SER evaluates the page changes associated with SE 24590-WTP-SE-
ENS-04-058 as well as the generic description of the change in ABAR 24590-WTP-SE-ENS-04-
0131.

ORP's review of the changes proposed in the subject ABAR and of the changes to the PSAR,
Revision 1, is summarized in the attached SER. Based upon the information in the Reference
letter and the attached SER, the changes, as modified, are acceptable and there is reasonable
assurance that the health and safety of the public, the workers, and the environment will not be
adversely affected by those changes, and that they comply with applicable laws, regulations, and
River Protection Project Waste Treatment and Immobilization Plant (WTP) contractual
requirements.

Mr. J. P. Henschel
04-WTP-204


-2-

SEP 02 2004

The attached SER provides final approval for the facility design changes as described in the ABAR, but only interim approval of the proposed specific changes to the PT PSAR. Final approval of the specific PT PSAR page changes will occur when the revised PSAR is submitted for the next biennial update. This amendment is effective immediately and shall be fully implemented within 30 days.

If you have any questions, please contact me, or your staff may contact Dr. Walter J. Pasciak, WTP Safety Authorization Basis Team, (509) 373-9189.

Sincerely,


Roy J. Schepens
Manager

WTP:WJP

Attachment

cc w/attach:
M. T. Sautman, DNFSB
J. M. Eller, PAC

**Safety Evaluation Report (SER)
of Proposed Authorization Basis Amendment Request (ABAR)
24590-WTP-SE-ENS-04-131, Revision 0 and of
Safety Evaluation (SE) 24590-WTP-SE-ENS-04-058, Revision 0
of Pretreatment (PT) Facility Changes
for the River Protection Project Waste Treatment and Immobilization Plant (WTP)**

1.0 INTRODUCTION

This SER documents the U.S. Department of Energy (DOE), Office of River Protection (ORP) evaluation of changes proposed by Bechtel National, Inc. (the Contractor) involving the reclassification of automatic isolation valve HPS-V-00274 from non-Important to Safety (ITS) to ITS, Safety Design Class (SDC). In addition to the valve, monitoring equipment that will detect a loss of pressure in the High Pressure Steam (HPS) system that will cause actuation of the valve will be classified as SDC. This valve shuts off the steam supply in the event of a steam line break. A steam line break within a hot cell could introduce enough moisture to degrade the effectiveness of the C5V HEPA filters.

No specific page changes were provided in ABAR 24590-WTP-SE-ENS-04-0131 because the pages were changed by an earlier SE, SE 24590-WTP-SE-ENS-04-058. SE 24590-WTP-SE-ENS-04-058 was written in response to DOE safety review questions, PT-PSAR-152 and 287, resulting from the review of the PT Preliminary Safety Analysis Report (PSAR), Revision 1. This SER evaluates the page changes associated with SE 24590-WTP-SE-ENS-04-058 as well as the generic description of the change in ABAR 24590-WTP-SE-ENS-04-0131.

2.0 BACKGROUND

The WTP authorization basis is the composite of information provided by a Contractor in response to radiological, nuclear, and process safety requirements that is the basis on which ORP grants permission to perform regulated activities. The authorization basis includes that information requested by the Contractor for inclusion in the authorization basis and subsequently accepted by ORP. The PSAR describes the analyzed safety basis for the facility, demonstrates that the facility will perform and be operated such that the radiological, nuclear, and process safety requirements are met, and demonstrates adequate protection of the public, workers, and the environment.

The PSAR is based on the preliminary design of the facilities and is part of the authorization basis for WTP construction. ORP authorized construction¹ of the PT facility based on the facility safety basis documented in the PSAR. Under the requirements of RL/REG-97-13, Revision 10,² the Contractor is required to update the PSAR every two years. The amendment request³ submitted by the Contractor proposes changes to the PSAR that will be incorporated in the

¹ ORP letter from R. J. Schepens to R. F. Naventi, BNI, "U.S. Department of Energy (DOE) Notice to Proceed with Construction Activities," 02-OSR-0517, dated November 13, 2002.

² Office of River Protection Position on Contractor-Initiated Changes to the Authorization Basis, RL/REG-97-13, Revision 10, Department of Energy, dated December 2003.

³ BNI letter from J. P. Henschel to R. J. Schepens, ORP, "Transmittal for Approval: Authorization Basis Amendment Request 24590-WTP-SE-ENS-04-0131, Revision 0, Change of HPS Isolation Valve Classification," CCN: 085304, dated April 14, 2004.

PSAR during the next biennial update. This SER documents ORP's evaluation of the facility changes proposed in the reference ABAR, and also evaluates the detailed changes to the PSAR. This SER provides final approval for the facility design changes as described in the ABAR, but only interim approval of the proposed specific changes to the PT PSAR. Final review and approval of the specific PSAR changes will be made at the time of PSAR update when revisions to Chapter 2 are provided. The specific changes to the PSAR include the areas of safety function and ITS structures, systems, and components (SSC) selection. The system design in Chapter 2 must be available to complete the review of changes to the hazard evaluation and accident analysis, and the review of the hazard evaluation and accident analysis must be complete to complete the review of Design Basis Event and SSC selection. As a result, only interim approval of the specific PSAR page changes is provided in this SER.

3.0 EVALUATION – GENERAL DESIGN CHANGES

3.1 Proposed Changes – Incorporation of Control to Ensure Shut-off of Steam Supply in Event of Steam Line Break:

SE 24590-WTP-SE-ENS-03-863, Revision 0, changed Valve HPS-V-00274 on P&ID 24590-PTF-M6-HPS-00014, Revision 1, from non-ITS Configuration Management/Seismic Category (SC)-III to an ITS QL-1/SC-I automatic isolation valve to shut off the steam supply in the event of a steam line break. The Safety Envelope Document previously incorporated this change based upon SE 24590-WTP-SE-ENS-04-058, Revision 0, which designated the valve as a credited safety function and classified it as an SDC SSC. The current change also adds associated instrumentation and control elements with the valve as SDC SSCs. The addition of the ITS valve and associated pressure monitoring equipment does not result in a decrease in the safety functions of ITS SSCs, but does change how an SC SSC meets its respective safety function.

During the review, ORP reviewers determined that the instrumentation and control elements associated with the valve should also be SDC.

Evaluation (acceptable, as modified): The addition of this valve and associated instrumentation and control elements implements the responses and commitments made to OSR in regard to OSR questions PT-PSAR-152 and 287. The safety function of protecting the C5V HEPA filters currently reflects the addition of the ITS isolation valve and enhances safety of the facility as it ensures proper operation of the C5V system in the event of a steam line break. The credited safety function of the ITS valve is consistent with the WTP responses and commitments made to OSR in regard to questions PT-PSAR-152 & 287.

4.0 EVALUATION – SPECIFIC CHANGES TO PSAR, REVISION 1⁴

4.1 Proposed Revised Text – Section 4.3.5.1, “Credited Safety Function”:

SE 24590-WTP-SE-ENS-04-058, Revision 0, changed this section as follows (underlined reflects changed text):

⁴ The specific changes to the PSAR are underlined below. Only those paragraphs of each section that changes are made to are presented in the “proposed revised text.”

“The credited safety function of SDC waste transfer and process piping, and isolation valves is to provide primary confinement of highly radioactive process liquids, the release of which could potentially cause consequences to receptors that exceed the radiological exposure standards (RES). The credited safety function of the steam isolation valve and associated instrumentation and control elements in the HPS system is to isolate the HPS system upon detection of a major steam line leak, specifically in the hot and black cells.”

During the review, ORP reviewers determined that the instrumentation and control elements associated with the valve should also be SDC. To address this concern, the contractor proposed to include the phrase “associated instrumentation and control elements” in the above underlined text.

Evaluation (acceptable, as modified): This change adds technical details describing the credited safety function of the valves and associated instrument and control elements of the HPS system. The change is consistent with the changes described and evaluated in Section 3.0 above.

4.2 Proposed Revised Text – Section 4.3.5.6, “Controls (TSRs)”:

SE 24590-WTP-SE-ENS-04-058, Revision 0, changed this section as follows (underlined reflects changed text):

“The SDC isolation valves will limit the probability that failure of downstream piping or in-line components cause draining or siphoning of a large amount of highly radioactive liquid into the hot cell, or challenge to the C5V system by a steam line break. The isolation valves have active components and will require surveillance to maintain their reliability. Equipment used in the surveillances will be controlled by a measurement and test equipment program addressed as an administrative control in the TSRs.”

Evaluation (acceptable): This change adds technical details describing the credited safety function of the valves and associated instrument and control elements of the HPS system. The change is consistent with the changes described and evaluated in Section 3.1 above.

4.3 Proposed Revised Text – Table 4A-1:

SE 24590-WTP-SE-ENS-04-058, Revision 0, changed the third row of this table as follows (underlined reflects changed text):

SDC System (Major Components)	Credited Safety Function	Representative and Bounding Accident (Chapter 3)	Controls (Chapter 5)
Safety Design Significant DOE and High Level Waste transfer piping (outer pipe); hot cell piping, jumpers, and other in-line components downstream of first isolation valve	Provide primary confinement of liquids and slurries. Transfer piping sloped to minimize accumulation of hydrogen generating materials.	3.4.1.2, 3.4.1.4, 3.4.1.8, 3.4.2.1	Design features – Piping 5.6.13
<u>SDC steam isolation valve and associated instrumentation and control elements</u>	<u>Isolate HPS system upon detection of challenge to CSV system due to steam line break.</u>		

During the review, ORP reviewers determined that the instrumentation and control elements associated with the valve should also be SDC. To address this concern, the contractor proposed to include the phrase “associated instrumentation and control elements” in the above underlined text of the first column.

Evaluation (acceptable, as modified): This change adds technical details describing the credited safety function of the valves and associated instrument and control elements of the HPS system. The change is consistent with the changes described and evaluated in Section 3.1 above.

5.0 CONCLUSIONS

On the basis of the considerations described above, ORP has concluded there is reasonable assurance that the health and safety of the public, the workers and the environment will not be adversely affected by the changes proposed by SE 24590-WTP-SE-ENS-04-058, Revision 0, and ABAR 24590-WTP-SE-ENS-04-008, Revision 0, and subsequent modifications defined in this SER and agreed to by the Contractor. The proposed changes, with the identified modifications, do not constitute a significant reduction in commitment or effectiveness relative to the design, construction, and operation of ITS SSCs. Accordingly, the proposed changes are acceptable and ORP approves the general design change and interim-approves the specific PSAR changes as proposed in SE 24590-WTP-SE-ENS-04-058 and ABAR 24590-WTP-SE-ENS-04-008.